

Serial No. 10/539,248  
Docket No. PTGF-03106US

16

REMARKS

Claims 1-9, 11-24, and 26-31 are all the claims presently pending in the application.

Claims 1, 14-16, have been amended to more particularly define the invention. Claims 10 and 25 are cancelled. Claims 4-10 and 19-25 have been withdrawn as being un-elected.

Entry of this Amendment is believed proper since no new issues are being presented to the Examiner which would require further consideration and/or search.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claim 1 stands rejected under 35 U.S.C. § 112, second paragraph. Claims 1-3, 12, 17-18, and 31 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Kawamura (U.S. Publication No. 2002/0195938). Claims 11, 13-15, 26, and 29-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura in view of Taskar, et al. (U.S. Patent No. 6,734,465). Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura in view of Pelka, et al. (U.S. Publication No. 2003/0085642). Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura, Taskar, and further in view of Yoo (U.S. Publication No. 20004/0169181). Claim 28 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawamura, Taskar, and further in view of Duggal, et al. (U.S. Patent No. 6,700,322).

These rejections are respectfully traversed in the following discussion.

Serial No. 10/539,248  
Docket No. PTGF-03106US

17

## I. THE CLAIMED INVENTION

The claimed invention, as exemplified by claim 1, is directed to a phosphor for converting ultraviolet light or blue light emitted from a light emitting element into a visible white radiation, including a light emitting component including an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate including a fluoroantimonate, a light emitting component including a manganese(IV)-activated compound, the manganese (IV)-activated compound selected from a group consisting of an antimonate, a titanate, a silicate-germanate, and an aluminate, a light emitting component including a europium-activated silicate-germanate, or a sensitizer selected from a group inclusive of Eu(II) and Mn(II) as a secondary activator and having an orange color, an orange-red color, a red color, or a dark red color in a spectrum range over 600 nm, or a light emitting component including a mixture of eight or less said light emitting components having different emission bands is brought to a state of broad continuous emission of about 380 to 780 nm, the mixture having a color temperature of about 10,000 K with blue-white color to 6,500 K with daylight color and having a color temperature of about 3,000 K with warm white color to 2,000 K with twilight color of reddish yellow by virtue of the superposition of the emission bands. The manganese (IV)-activated compound selected from the group consisting of the antimonate, the titanate, the silicate-germanate, and the aluminate includes a hexagonal structure represented by a general formula of:  $Me^I_x Me^{II}_y Al_m O_n; Mn$ . The  $Me^I$  comprises at least one element selected from group II or III metals of the Periodic Table and/or at least one lanthanide ion selected from the group consisting of Eu, Pr, Sm, Gd, Dy, and Ce, the  $Me^{II}$  includes at least one monovalent cation,  $0 \leq x \leq 8$ ,  $0 \leq y \leq 4$ ,  $0 < m \leq 16$ ,  $0 < n \leq 27$ , and  $0 < z \leq 0.5$ .

In conventional phosphors, the color rendering index Ra may be disadvantageously as

Serial No. 10/539,248  
Docket No. PTGF-03106US

18

low as 89 to 90, the necessary broadband red component and other light emitting component may be absent, and may not have long-term stability. (See Application at page 3, lines 6-18).

The claimed invention, on the other hand, may produce light having color rendering properties close to those in natural light or incandescent lamp light, and a color rendering index Ra above 90, and may emit a visible white radiation having a high level of color rendering properties. (See Application at page 3, line 19-page 4, line 5).

## II. THE 35 USC §112, SECOND PARAGRAPH REJECTION

Claims 1-31 stand rejected under 35 U.S.C. §112, second paragraph. This rejection is partially traversed.

Regarding claim 16, Applicants assert that the claim does not recite the phrase, "such as," as the Examiner alleges.

Also regarding claim 1, the claims have been amended, above, to overcome this rejection.

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw this rejection.

## III. THE PRIOR ART REFERENCES

### A. The Rejections Based on Kawamura

The Examiner alleges that Kawamura teaches the claimed invention as recited by claims 1-3 and 12, 17, 18, and 31. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Kawamura.

Claim 1 recites, inter-alia:

"wherein the phosphor further comprises a borate-silicate-phosphate which has been activated by europium and manganese and is represented by

Serial No. 10/539,248  
Docket No. PTGF-03106US

19

general formula

$Me^I, Me^{II}, (B, Si, P)_x O_y X_m; Eu, Mn,$

wherein

$Me^I$  comprises at least one element selected from group II and/or group III metals of the Periodic Table and/or at least one lanthanide ion selected from the group consisting of Eu, Pr, Sm, Gd, Dy, and Ce,

$Me^{II}$  comprises at least one monovalent cation,

$X$  comprises Cl, F, or Br.

$0 \leq x \leq 10,$

$0 \leq y \leq 12,$

$0 < a \leq 6,$

$0 < n \leq 24,$

$0 \leq m \leq 16,$  and

$B$  may be completely or partially replaced with P, Si, Ga, or Al and may be partially replaced with V, Nb, Ta, Ge, W, or Mo."

In contrast, the Examiner has not alleged, and Kawamura fails to teach or suggest the above-recited features of claim 1. Instead, the Examiner merely alleges that Kawamura teaches or suggests a light emitting component selected from a group consisting of a manganese (IV) activated compound, the manganese (IV) activated compound selected from a group consisting of an aluminate. (Office Action, page 3, lines 9-11).

The Examiner also erred by alleging that Kawamura teaches or suggests claims 2, 3, 17, 18, and 31, without identifying where Kawamura teaches or suggests the features of the above claims. The Applicants point out that mere allegations that claims 2, 3, 17, 18, and 31 may be directed to elements of the Markush group not selected by the Examiner as his basis for rejecting the claims does not satisfy the Examiner's burden to prove that Kawamura indeed teaches or suggests the features recited by each of the claims 2, 3, 17, 18, and 31 are anticipated by Kawamura.

Since there are elements of the claimed invention that are not taught or suggested by Wanmaker, the Examiner is respectfully requested to reconsider and withdraw this rejection.

Serial No. 10/539,248  
Docket No. PTGF-03106US

20

### B. The Rejections Based on Kawamura and Taskar

The Examiner alleges that Kawamura, when combined with Taskar, renders obvious claims 11, 13-15, 26, 29, and 30. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Kawamura fails to teach or suggest claim 1's features below:

"wherein the phosphor further comprises a borate-silicate-phosphate which has been activated by europium and manganese and is represented by general formula

$Me^I_x Me^{II}_y (B, Si, P)_z O_n X_m Eu, Mn,$

wherein

$Me^I$  comprises at least one element selected from group II and/or group III metals of the Periodic Table and/or at least one lanthanide ion selected from the group consisting of Eu, Pr, Sm, Gd, Dy, and Ce,

$Me^{II}$  comprises at least one monovalent cation,

$X$  comprises Cl, F, or Br,

$0 \leq x \leq 10,$

$0 \leq y \leq 12,$

$0 < z \leq 6,$

$0 < n \leq 24,$

$0 \leq m \leq 16,$  and

$B$  may be completely or partially replaced with P, Si, Ga, or Al and may be partially replaced with V, Nb, Ta, Ge, W, or Mo."

These features similarly recited by independent claims 14 and 15, and from which claims 12 and 13 depend. Taskar also fails to remedy Kawamura's deficiencies.

The Examiner does not even allege, and Taskar fails to teach or suggest the above-recited features of claim 1. Instead, the Examiner merely alleges that Taskar teaches a phosphor for converting ultraviolet light emitted from the light emitting element to a visible white radiation, wherein white light having color rendering Ia and a color rendering index Ra>90 is produced by a combination of a radiation emitted from the phosphor. (Office Action, page 5, lines 10-13).

Claims 14 and 15 recite similar features as those recited by claim 1 above, from which

Serial No. 10/539,248  
Docket No. PTGF-03106US

21

claims 26, 29, and 30 depend.

Since there are elements of the claimed invention that are not taught or suggested by Kawamura or Taskar, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### C. The Rejections Based on Kawamura and Pelka

The Examiner alleges that Kawamura, when combined with Pelka, renders obvious claim 16. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Kawamura fails to teach or suggest claim 1's features below:

"wherein the phosphor further comprises a borate-silicate-phosphate which has been activated by europium and manganese and is represented by general formula

$Me^I_x Me^{IIy} (B, Si, P)_z O_n X_m : Eu, Mn,$

wherein

$Me^I$  comprises at least one element selected from group II and/or group III metals of the Periodic Table and/or at least one lanthanide ion selected from the group consisting of Eu, Pr, Sm, Gd, Dy, and Ce,

$Me^{II}$  comprises at least one monovalent cation,

$X$  comprises Cl, F, or Br,

$0 \leq x \leq 10,$

$0 \leq y \leq 12,$

$0 < z \leq 6,$

$0 < n \leq 24,$

$0 \leq m \leq 16,$  and

$B$  may be completely or partially replaced with P, Si, Ga, or Al and may be partially replaced with V, Nb, Ta, Ge, W, or Mo."

Independent claim 16 recites similar features as those recited by claim 1.

The Applicants point out that Pelka also fails to remedy Kawamura deficiencies.

That is, the Examiner does not even allege, and Pelka fails to teach or suggest, the above-recited features of claim 1. Instead, the Examiner merely alleges that Pelka teaches an LED lamp, a light guiding part, and a wavelength converting part. (Office Action, page 11,

Serial No. 10/539,248  
Docket No. PTGF-03106US

22

lines 1-5).

Since there are elements of the claimed invention that are not taught or suggested by Kawamura or Pelka, the Examiner is respectfully requested to reconsider and withdraw this rejection.

**D. The Rejections Based on Kawamura, Taskar, and Yoo**

The Examiner alleges that Kawamura, when combined with Taskar and Yoo, renders obvious claim 27. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Kawamura and Taskar fail to teach or suggest claim 1's features below:

"wherein the phosphor further comprises a borate-silicate-phosphate which has been activated by europium and manganese and is represented by general formula  
 $Me^I_1 Me^{II}_2 (B, Si, P)_x O_n X_m : Eu, Mn,$   
wherein  
 $Me^I$  comprises at least one element selected from group II and/or group III metals of the Periodic Table and/or at least one lanthanide ion selected from the group consisting of Eu, Pr, Sm, Gd, Dy, and Ce,  
 $Me^{II}$  comprises at least one monovalent cation,  
 $X$  comprises Cl, F, or Br,  
 $0 \leq x \leq 10,$   
 $0 \leq y \leq 12,$   
 $0 < a \leq 6,$   
 $0 \leq n \leq 24,$   
 $0 \leq m \leq 16,$  and  
B may be completely or partially replaced with P, Si, Ga, or Al and may be partially replaced with V, Nb, Ta, Ge, W, or Mo."

These features similarly recited by independent claim 15, from which claim 27 depends. Yoo also fails to remedy Kawamura's and Taskar's deficiencies.

The Examiner does not even allege, and Yoo fails to teach or suggest the above-recited features of claim 15. Instead, the Examiner merely alleges that Yoo teaches that a phosphor is

Serial No. 10/539,248  
Docket No. PTGF-03106US

23

a thin-film phosphor layer that is sealed with said light transparent glass. (Office Action, page 12, lines 3-6).

Since there are elements of the claimed invention that are not taught or suggested by Kawamura, Taskar, and Yoo, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### E. The Rejections Based on Kawamura, Taskar, and Duggal

The Examiner alleges that Kawamura, when combined with Taskar and Duggal, renders obvious claim 28. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Kawamura and Taskar fail to teach or suggest Kawamura fails to teach or suggest claim 1's features below:

"wherein the phosphor further comprises a borate-silicate-phosphate which has been activated by europium and manganese and is represented by general formula

$Me^I Me^{II} (B, Si, P)_a O_n X_m; Eu, Mn,$   
wherein

$Me^I$  comprises at least one element selected from group II and/or group III metals of the Periodic Table and/or at least one lanthanide ion selected from the group consisting of Eu, Pr, Sm, Gd, Dy, and Ce,

$Me^{II}$  comprises at least one monovalent cation,  
 $X$  comprises Cl, F, or Br,

$0 \leq x \leq 10,$

$0 \leq y \leq 12,$

$0 < a \leq 6,$

$0 < n \leq 24,$

$0 \leq m \leq 16,$  and

$B$  may be completely or partially replaced with P, Si, Ga, or Al and may be partially replaced with V, Nb, Ta, Ge, W, or Mo."

These features are similarly recited by independent claim 15, from which claim 28 depends. Duggal also fails to remedy Kawamura's and Taskar's deficiencies.

The Examiner does not even allege, and Duggal fails to teach or suggest the above-

Serial No. 10/539,248  
Docket No. PTGF-03106US

24

recited features of claim 15. Instead, the Examiner merely alleges that Duggal teaches that a phosphor layer is planar. (Office Action, page 12, lines 18-20).

Since there are elements of the claimed invention that are not taught or suggested by Kawamura, Taskar, and Duggal, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### V. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-9, 11-24, and 26-31, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

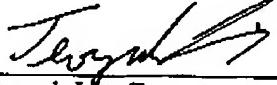
Serial No. 10/539,248  
Docket No. PTGF-03106US

25

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 6/1/09

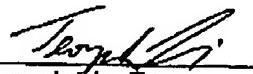
  
Jeoyuh Lin, Esq.  
Registration No. 56,032

McGinn IP Law Group, PLLC  
Intellectual Property Law  
8321 Old Courthouse Road, Suite 200  
Vienna, VA 22182-3817  
(703) 761-4100  
Customer No. 21254

Sean M. McGinn, Esq.  
Registration No. 34,386

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Amendment Under 37 CFR §1.116 by facsimile with the United States Patent and Trademark Office to Examiner Donald L. Raleigh, Group Art Unit 2879 at fax number (571) 273-8300 this 1st day of June, 2009.

  
Jeoyuh Lin, Esq.  
Registration No. 56,032